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09/262,778	03/04/1999	MICHAEL J. PENBERTH	DUPONT1120-1	9973

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EXAMINER	
CHAWAN, SHEELA C	

ART UNIT	PAPER NUMBER
2625	16

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/262,778	Applicant(s) PENBERTH ET AL.	
	Examiner Sheela C Chawan	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 5, line13 -26 filed on May 14, 2004 (paper # 15/C), with respect to the rejection (s) of claim(s) 1-5 under 103(a) rejection have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sipma (US.5,149,976).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 1 determining the position of a " feature " as recited in the preamble of the claim. In line 4, body of the claim recites determining the " reference feature " as recited vague and unclear. The examiner is not clear because in the preamble of the claim recites " a feature " and in the body of the claim it recites " reference feature ". Please need explanation.

Reason For Allowance

3. The following is an examiner's statement of reasons for allowance:

Claim 5, would be allowable if rewritten or amended to overcome the rejection(s)

under 35 U.S.C. 112, second paragraph, set fourth in this office action.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103□ and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 4, are rejected under 35 U.S.C. 103(a) as being unpatentable over of IBM Technical Disclosure Bulletin, in view of Sipma (US. 5,149,976).

As per claims 1 and 4, IBM Technical Disclosure Bulletin discloses charged particle beam pattern generation apparatus and method for determining the position of a feature (calibrating grid array which is an array of square holes in a gold film over a silicon wafer, as shown in fig 1) within the scan (raster scanning) that is effective at the operating frequency of the scan and using a limited bandwidth video signal, comprising the steps of (fig 1, page 1, see second paragraph):

determining the reference feature (fig 1, see second paragraph) to be an edge over which the video signal changes abruptly from one level to a higher or lower level (fig 1, page 1, see paragraph 4);

determining whether the beam is only turned on over a short region of the scan (E-beam is unblanked only over the grid holes, fig 1, see paragraph 4).

IBM Technical Disclosure Bulletin discloses a Technique of Characterizing Calibration Grids in E-Beam in that he does not clearly discloses an overlap between the beams on portion of the scan ... .

Sipma discloses charged particle beam pattern generation apparatus and method. The system comprises of:

representing the degree of overlap between the beam on portion of the scan and the higher video level part of the feature as the total video signal accumulated in that scan (column 6, lines 11-30, column 10, lines 20- 45, 53-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified TDB to include a degree of overlap between the beam on portion of the scan and the higher video level part of the feature as the total video signal accumulated in

that scan. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified TDB by the teaching of Sipma in order to produce a gradient in the opposite direction, the pixel spacing would be progressively increased from left to right (as suggested by Sipma at column 6, lines 11- 30).

5. Claim 2, is rejected under 35 U.S.C. 103(a) as being unpatentable over Sipma (US. 5,149,976), in view of Adler et al. (US.6,087,659).

Regarding claim 2, Sipma discloses charged particle beam pattern generation apparatus and method. The system comprises of:

using a sample having a black to white video (column 14, lines 28-42, column 15, lines 1-11) transition as a reference feature (column 5, lines 39- 45, column 7, lines 26-31, column 10, lines 53- 61);

unblanking (column 7, lines 16-21) the electron beam for a short period during the scan (column 10, lines 57-60, column 16, lines 33-49);

advancing the unblank-blanked period along the line by a small increment each succeeding scan (column 5, lines 35-45, column 11, lines 31- 56);

sampling the amplifier output by an analog-to-digital converter (column 7, lines 3-7) at a time delay (column 10, lines 20- 45) following the unblank-blanked period determined by the video amplifier bandwidth (column 15, lines 12-23);

Sipma is silent about specific details of arranging the successive sample for giving a video profile representative of the video profile of a slow scan with a wide beam; and

Mathematically processing the representative video profile to yield the position of the video edge with respect to the scan.

Adler discloses apparatus and method for secondary electron emission microscope. The system comprises of:

arranging the successive sample for giving a video profile representative of the video profile of a slow scan with a wide beam (column3, lines 25-27, column 5, lines 41-51, column 6, lines 16-26).

mathematically processing the representative video profile to yield the position of the video edge (column 4, lines 47- 53) with respect to the scan (column 5, lines 41-51, column 6, lines 16-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sipma to include details of arranging the successive sample for giving a video profile representative of the video profile of a slow scan with a wide beam. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sipma by the teaching of Adler in order to scan a wide beam of primary electrons is introduced, which is significantly faster than SEM imaging (as suggested by Adler at column 6, lines 37-42).

6. Claim 3, is rejected under 35 U.S.C. 103(a) as being unpatentable over Sipma (US. 5,149,976), in view of Prior (US. 5,345,085).

Regarding claim 3, Sipma discloses charged particle beam pattern generation apparatus and method. The system comprises of:

a) choosing a predetermined plurality of pixels of said raster scan to be calibrated (column 3, lines 1- 7, column 7, lines 42- 58);

(b) moving (column 5, lines 24- 55) at least one feature at the image plane having video contrast adjacent (column 1, lines 28- 31) to the landing point of said plurality of pixels (column 8, lines 50- 58, column 10, lines 14-19);

c) strobing said beam for said plurality of pixels within said raster scan (column 11, lines 44 -56);

(d) incrementally moving said plurality of pixels within said raster scan toward said at least one video contrast feature (column 11, lines 44-56);

(f) repeating steps (c) through (e) until said plurality of pixels crosses said at least one video contrast feature (column 7, lines 45-58).

Sipma is silent about integrating the signal resulting from said plurality of pixels as said plurality of pixels move towards said at least one video contrast feature.

Prior discloses a method of electronically measuring parameters of a beam in a raster scan system comprising the steps of:

(e) integrating (column 9, lines 3- 65) the signal resulting from said plurality of pixels as said plurality of pixels move towards said at least one video contrast feature (abstract, column 3, lines 1 - 15, column 6, lines 35- 68). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sipma to include integrating the signal resulting from said plurality of pixels as said plurality of pixels move towards said at least one video contrast feature. It would have been obvious to one of ordinary skill in the art at the time of the invention to have

modified Sipma by the teaching of Prior thereby allowing for the use of lower gain amplifiers which improves signal to noise performance (as suggested by Prior at column 3, lines 41- 44).

Remarks

7. In the remark, applicants have argued in substance that:

1. IBM does not disclose, " using a limited bandwidth video signal ".

2. Prior does not address in any way determining a total video signal.

3. IBM does not teach determining a reference feature to be an edge over which a video signal changes....

4. IBM does not teach determining whether the beam is only turned on over a short region of the scan.

In the reply, the examiner states the following.

As to point 1, with respect to the art rejection, the examiner has carefully considered applicant's argument, but firmly believes the cited reference to reasonably and properly meet the claimed limitation. In response to applicant's arguments, the recitation has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

As to point 2, the examiner agrees with applicant that Prior does not address in any way representing the degree of overlap. Applicant should know that there is no such word in the claim that " determining a total video signal ..., infact, the claim recites representing the degree of overlap ... . The examiner has brought in new reference to reject this claim.

As to point 3, the examiner disagree with applicant. Therefore, IBM does teach this limitation by measuring the calibration grid, which is an array of square holes in a gold film over a silicon wafer. During scanning the grid with E- beam is unblanked only over the grid holes producing a signal which is a positive and negative transmission are used to identify the line at which beams goes into and out of the gride hole (note, the transmission of signal from positive to negative is considered to be changes abruptly in video signal, see, fig 1, see page 3 and 4). However, applicant is reminded that the claim language is given its broadest reasonable interpretation.

As to point 4, the examiner disagrees with applicant. Therefore, IBM does teach this limitation by scanning of the grid array with E-beam is unblanked only over the gride holes and the grid holes is selected to be measured for a short region of the scan, (see fig 1, paragraph 4).

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is 703-305- 4876. The examiner can normally be reached on Monday - Thursday 6 - 7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 703-308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Group Art Unit 2625
July 16, 2004